

## REMARKS

Claims 1-2, 4, 6-10, 12-13, and 16-24 are pending in the present Application. Claim 2 has been canceled, claims 1, 16-17, 22, and 24 have been amended, and claim 29 has been added, leaving Claims 1, 4, 6-10, 12-13, 16-24, and 29 for consideration upon entry of the present Amendment.

The limitation of claim 2, that the cyclodextrin-containing compound is methyl- $\alpha$ -cyclodextrin, has been incorporated into claim 1.

Claims 16 and 17 have been amended to depend from new claim 29 instead of claim 1.

Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

### Allowable Claims

Applicants thank the Examiner for the indication of allowance of claims 10, 12-13, 18-21, and 23. However for reasons set forth below, it is believed that claims 1, 16-17, 22, 24 and new claim 29 are independently allowable on other grounds.

### New Claim

Claim 29 has been drafted to more specifically claim the invention. Antecedent basis can be found at least in claim 8, and in Examples 1-20. Claim 29 recites that the urethane thickener has “at least one urethane linkage formed from a diisocyanate comprising 1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,10-decamethylene diisocyanate, 2,2,4-trimethyl-1,6-diisocyanatohexane, and a combination comprising at least one of the foregoing diisocyanates.” This limitation is based on withdrawn claim 8, which recites that the urethane thickener has “at least one branched chained or straight chained diisocyanate functional group of a size and configuration such that said diisocyanate functional group is capable of complexing with said hydrophobic cavity of said cyclodextrin-containing compound.” The specific diisocyanates of claim 29 are all branched chained diisocyanates (2,2,4-trimethyl-1,6-diisocyanatohexane) or straight chained diisocyanates (1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, and 1,10-decamethylene diisocyanate).

**Claim Rejections Under 35 U.S.C. § 112, First Paragraph**

Applicants thank the Examiner for the removal of the 35 U.S.C. § 112, first paragraph rejection of claims 16-17.

Claim 24 stands rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 24 has been amended to recite a polymer solids content of 16-20 wt%. Antecedent basis for this amendment can be found at least on p. 7, ll. 24-26. Reconsideration and removal of the 35 U.S.C. § 112, first paragraph rejection of claim 24 is respectfully respected in view of this amendment.

**Claim Rejections Under 35 U.S.C. § 112, Second Paragraph**

Claim 22 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22 has been amended to depend from claim 12 rather than from claim 11, which was canceled. Reconsideration and removal of the 35 U.S.C. § 112, second paragraph rejection of claims 22 is respectfully respected in view of this amendment.

**Claim Rejections Under 35 U.S.C. § 102(b)**

Applicants thank the Examiner for the removal of the 35 U.S.C. § 102(b) rejection of claims 1 and 2 as being anticipated by Eisenhart, *et al.* (U.S. Patent No. 5,137,571) with Onwumere, *et al.* (U.S. Patent No. 5,354,808) to support inherency.

**Claim Rejections Under 35 U.S.C. § 103(a)**

Applicants thank the Examiner for the removal of the 35 U.S.C. § 103(a) rejection of claims 10-24 as being unpatentable over Eisenhart, *et al.* (U.S. Patent No. 5,137,571) in view of Glancy, *et al.* (U.S. Patent No. 5,914,373).

Claims 1, 16 and 17 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Eisenhart, *et al.* (U.S. Patent No. 5,137,571) in view of Emmons, *et al.* (U.S. Patent No. 4,079,028). Applicants respectfully traverse this rejection.

Eisenhart, *et al.* generally discloses the reversible complexation of cyclodextrin compounds with the hydrophobic moieties of hydrophobic thickeners in the absence of organic solvents to suppress the viscosity of aqueous solutions of the thickener. The resulting complexes are decomplexed to permit the thickener to perform its intended function (Abstract). Hydrophobically modified polyurethanes, alkali soluble emulsions, hydroxyethyl cellulose, and polyacrylamides are disclosed (col. 1, ll. 28-34).  $\alpha$ -,  $\beta$ -, and  $\gamma$ -cyclodextrins, and their hydroxyethyl- and hydroxypropyl- derivatives are also disclosed (col. 3, ll. 50-63).

Emmons, *et al.* generally discloses urethane thickeners having at least three low molecular weight hydrophobic groups at least two of which are terminal (external) hydrophobic groups. The polymers can be solubilized in water by use of a water miscible alcohol or surfactant (col. 2, ll. 44-58). Suitable diisocyanate starting materials for the polyurethanes are listed in col. 8, l. 55 to col. 9, l. 16. No mention is made of cyclodextrins of any kind.

The Examiner alleges that:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select any of the hydrophobically modified polyethoxylated urethane thickeners taught by Emmons with a reasonable expectation of success because Eisenhart suggests their use.

Applicants respectfully traverse, at least to the extent that this rejection applies to claim 1 as herein amended and new claim 29, which is based on previously presented claim 1. Claim 1 as herein amended incorporates the limitation of previously presented claim 2, which had the limitation that the cyclodextrin-containing compound is methyl- $\alpha$ -cyclodextrin. Since the instant rejection does not apply to previously presented claim 2, it does not apply to claim 1 as herein amended.

Regarding new claim 29, Applicants respectfully submit that Eisenhart, *et al.* does not teach or suggest the use of the polyurethane thickeners of Emmons *et al.* Eisenhart, *et al.* only states, "U.S. Pat. Nos. 4,155,892 and 4,079,028 [Emmons, *et al.*] are directed to polyurethane

thickeners, characterized by at least three hydrophobic groups interconnected by hydrophilic polyether groups, formulated with organic solvents” (col. 1, ll. 59-62). This reference to Emmons, *et al.*, is not found in the “Summary of the Invention” and the “Detailed Description of the Invention” sections of Eisenhart, *et al.* Moreover, Emmons, *et al.* is silent on cyclodextrins.

For an obviousness rejection to be proper, the Examiner must meet the burden of (1) establishing that all elements of the invention are disclosed in the prior art; and (2) that the prior art relied upon, or knowledge generally available in the art at the time of the invention, must provide some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). “A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). To find obviousness, the Examiner must “identify a reason that would have prompted a person of ordinary skill in the art in the relevant field to combine the elements in the way the claimed new invention does.” *Id.*

Eisenhart, *et al.* does not disclose the chemical structure of suitable polyurethane thickeners. The only specific disclosure is that of QR-708, a commercially available polyurethane thickener sold by Rohm & Haas of undefined chemical structure. There is no suggestion in Eisenhart, *et al.* that the urethane thickeners disclosed therein have “at least one urethane linkage formed from a diisocyanate comprising 1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,10-decamethylene diisocyanate, 2,2,4-trimethyl-1,6-diisocyanatohexane, and a combination comprising at least one of the foregoing diisocyanates” as recited by claim 29.

Emmons *et al.* is relied on by the Examiner for the disclosure of a list of possible diisocyanate precursors to hydrophobically modified urethane thickeners. However no reason or motivation is provided in Eisenhart, *et al.* or Emmons, *et al.* to select only straight chain and branched chain diisocyanates 1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,10-decamethylene diisocyanate, and 2,2,4-trimethyl-1,6-diisocyanatohexane as recited in claim 29 from the extensive list disclosed by Emmons, *et al.* In the 281 examples of hydrophobically modified urethane thickeners in Emmons, *et al.*, the vast majority of them are

derived from 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate, methylene bis(4-cyclohexylisocyanate), and diphenylmethane-4,4'-diisocyanate. These diisocyanates are all cyclic or polycyclic, not straight chain or branched chain. Considering the disclosure of Emmons, *et al.* in its entirety, no motivation is provided to select straight chain and branched chain diisocyanates for urethane thickeners to the exclusion of all others.

Even if a *prima facie* case of obviousness was made by combining Eisenhart, *et al.* and Emmons, *et al.*, which is not conceded, the composition of claim 29 has unexpected beneficial properties. It is surprising and unexpected that the viscosity of aqueous solutions of the urethane thickeners derived from the straight chain and branched chain diisocyanates recited in claim 29 is suppressed more by cyclodextrins than the viscosity of aqueous solutions of urethane thickeners derived from cyclic or polycyclic diisocyanates is suppressed by cyclodextrins.

An applicant can rebut a *prima facie* case of obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. *In re Dillon*, 919 F.2d 688, 692-93, 16 U.S.P.Q.2d 1987, 1901 (Fed. Cir. 1990).

The consistent result of all of Examples 1-19 in the present application is that the viscosity of aqueous solutions of urethane thickeners derived from 1,6-hexamethylene diisocyanate (HDI), which is a straight chain diisocyanate, is suppressed more than the viscosity of aqueous solutions of urethane thickeners derived from (4,4'-methylene bis(isocyanatohexane, or Des W), which is a cyclic diisocyanate, when they are combined with methyl- $\alpha$ -cyclodextrin or methyl- $\beta$ -cyclodextrin. Comparative data can be found in Tables 1-4 on pp. 10-13. In view of this unexpected result, Applicants respectfully submit that claim 29 is not obvious over Eisenhart, *et al.* in view of Emmons, *et al.*

For all of the foregoing reasons, reconsideration and removal of the rejection of claim 1 as herein amended, and of claim 1 to the extent that it applies to new claim 29, under 35 U.S.C. § 103(a), as allegedly unpatentable over Eisenhart, *et al.* in view of Emmons, *et al.* is respectfully requested.

Claims 1, 2, 16 and 17 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Eisenhart, *et al.* (U.S. Patent No. 5,137,571) in view of Emmons, *et al.* (U.S. Patent No. 4,079,028) and further in view of Lau, *et al.* (U.S. Patent No. 5,376,709) and Lau, *et al.* (U.S. Patent No. 5,521,266). Applicants respectfully traverse this rejection, at least to the extent that it applies to claim 1 as herein amended and to new claim 29.

Eisenhart, *et al.* and Emmons, *et al.* are discussed above.

Lau, *et al.* '709 generally discloses an improved method for reversibly suppressing the viscosity of an aqueous solution containing a hydrophobically modified thickener by first complexing the thickener with methyl- $\beta$ -cyclodextrin and then decomplexing the thickener (Abstract). The thickener is decomplexed by the addition of a surface active agent (anionic, nonionic, and cationic surfactants) or by the addition of water soluble organic solvents (e.g. ethanol or Texanol® (col. 4, ll. 3-20).

Lau, *et al.* '266 generally discloses an aqueous polymerization method comprising the steps of (1) complexing at least one monomer having low water solubility with a macromolecular organic compound having a hydrophobic cavity and (2) polymerizing in an aqueous system 0.1-100% of the complexed monomer with 0-99.9% of a monomer having high water solubility (Abstract). The macromolecular organic compound can be cyclodextrin or a cyclodextrin derivative. Suitable cyclodextrin derivatives are methyl, triacetyl, hydroxypropyl, and hydroxyethyl derivatives of  $\alpha$ -,  $\beta$ -, and  $\gamma$ -cyclodextrin. Methyl- $\beta$ -cyclodextrin is the preferred derivative (col. 3, ll. 51-62). Methyl- $\beta$ -cyclodextrin is used exclusively in the examples, and there is no mention of urethane thickeners.

The Examiner alleges that:

Therefore, in view of the teaching of Lau '709 regarding the utility of methyl- $\beta$ -cyclodextrin, it would be further obvious to modify the combination of Eisenhart and Emmons by the use of any available modified cyclodextrin, such as methyl- $\alpha$ -cyclodextrin, disclosed by Lau '266, with a reasonable expectation of success.

Applicants respectfully traverse. Lau, *et al.* '266 teaches a polymerization method, not a composition for viscosity suppression of urethane thickeners. Methyl- $\alpha$ -cyclodextrin is not specifically mentioned in Lau, *et al.* '266, but it can be inferred from a Markush group therein.

Lau, *et al.* '266 is silent on polyurethane thickeners, and offers no hint or suggestion that that methyl- $\alpha$ -cyclodextrin is suitable for viscosity suppression of urethane thickeners. Lau, *et al.* '709 discloses polyurethane thickeners, but is silent on the chemical structure of the polyurethane thickeners disclosed therein.

For an obviousness rejection to be proper, the Examiner must meet the burden of (1) establishing that all elements of the invention are disclosed in the prior art; and (2) that the prior art relied upon, or knowledge generally available in the art at the time of the invention, must provide some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). "A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). To find obviousness, the Examiner must "identify a reason that would have prompted a person of ordinary skill in the art in the relevant field to combine the elements in the way the claimed new invention does." *Id.*

Lau, *et al.* '266 is silent on polyurethane thickeners. Lau, *et al.* '709 does not disclose any specific diisocyanate precursors for the polyurethane thickener. Emmons *et al.* is relied on by the Examiner for the disclosure of a list of possible diisocyanate precursors to hydrophobically modified urethane thickeners. However no reason or motivation is provided in any of the references to select only straight chain and branched chain diisocyanates 1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,10-decamethylene diisocyanate, and 2,2,4-trimethyl-1,6-diisocyanatohexane as recited in claim 29 from the extensive list disclosed by Emmons, *et al.* In the 281 examples of hydrophobically modified urethane thickeners in Emmons, *et al.*, the vast majority of them are derived from 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate, methylene bis(4-cyclohexylisocyanate), and diphenylmethane-4,4'-diisocyanate. These diisocyanates are all cyclic or polycyclic, not straight chain or branched chain. Considering the disclosure of Emmons, *et al.* in its entirety, no motivation is provided to select straight chain and branched chain diisocyanates for urethane thickeners to the exclusion of all others.

Moreover, as discussed above, surprising and unexpected results are obtained when the associative thickeners are derived from straight chain and branched chain diisocyanates as

opposed to cyclic or polycyclic diisocyanates. Examples 1-19 of the present application show that the viscosity of aqueous solutions of urethane thickeners derived from 1,6-hexamethylene diisocyanate (HDI), which is a straight chained diisocyanate, is suppressed more than the viscosity of aqueous solutions of urethane thickeners derived from (4,4'-methylene bis(isocyanato)hexane, or Des W), which is a cyclic diisocyanate, when they are combined with methyl- $\alpha$ -cyclodextrin or methyl- $\beta$ -cyclodextrin. Comparative data can be found in Tables 1-4 on pp. 10-13. In view of this unexpected result, Applicants respectfully submit that claim 29 is not obvious over Eisenhart, *et al.* in view of Emmons, *et al.* and further in view of Lau, *et al.* and Lau, *et al.*

Applicants submit that since none of the references provide any motivation for choosing the specific straight chain and branched chain diisocyanate precursors recited in claim 29, and since surprising results were obtained when they were used, claim 29 is not obvious over the references. Therefore, reconsideration and removal of this obviousness rejection as it might be applicable to claim 29 is respectfully requested.

Regarding claim 1 as herein amended, which is a combination of previously presented claims 1 and 2, no motivation to substitute the methyl- $\beta$ -cyclodextrin disclosed by Lau '709 with the methyl- $\alpha$ -cyclodextrin of Lau '266 can be found in either of the references. Lau '266 teaches a polymerization method, not a composition for viscosity suppression of urethane thickeners, and offers no hint or suggestion that that methyl- $\alpha$ -cyclodextrin disclosed therein is suitable for viscosity suppression of urethane thickeners.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that the prior art relied upon, or knowledge generally available in the art at the time of the invention, provides some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). "A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). To find obviousness, the Examiner must "identify a reason that would have prompted a person of ordinary skill in the art in the relevant field to combine the elements in the way the claimed new invention does." *Id.*



Applicants respectfully submit that no motivation to replace the methyl- $\beta$ -cyclodextrin of Lau, *et al.* '709 with the methyl- $\alpha$ -cyclodextrin of Lau, *et al.* '266 can be found in either of the references. First, Lau, *et al.* '266 teaches an aqueous polymerization method suitable for polymerizing monomers with low water solubility by complexing them with methyl- $\alpha$ -cyclodextrin. There is no mention of urethane thickeners in Lau, *et al.* '266, and no hint or suggestion that the methyl- $\alpha$ -cyclodextrin disclosed therein is suitable for suppressing the viscosity of urethane thickeners. At best, Lau, *et al.* '266 serves as a disclosure for the existence of methyl- $\alpha$ -cyclodextrin.

Moreover, it is not obvious to substitute methyl- $\beta$ -cyclodextrin with methyl- $\alpha$ -cyclodextrin. Although they are both composed of  $\alpha$ -D-glucopyranoside units, they are quite different in their physical structures. Methyl- $\alpha$ -cyclodextrin is composed of six glucopyranoside units arranged in a ring, while methyl- $\beta$ -cyclodextrin is composed of seven glucopyranoside units arranged in a ring. As such, the size of the hydrophobic cavities inside the toroidal physical structures of the molecules are quite different, with the diameter of the methyl- $\beta$ -cyclodextrin cavity being necessarily larger than the diameter of the methyl- $\alpha$ -cyclodextrin cavity. Also, their physical properties are markedly different. For example, methyl- $\beta$ -cyclodextrin has a water solubility of only 18.5 g/L, while methyl- $\alpha$ -cyclodextrin has a water solubility of 145 g/L (<http://en.wikipedia.org/wiki/Cyclodextrin>). Since the viscosity suppression effect of these cyclodextrins depends upon the hydrophobe moiety of the urethane thickener filling the hydrophobic cavity, there can be no expectation *a priori* that methyl- $\beta$ -cyclodextrin and methyl- $\alpha$ -cyclodextrin, with different size hydrophobic cavities and widely divergent water solubilities, will both have hydrophobic cavities of suitable sizes to complex the terminal phobes of the urethane thickeners, and therefore be effective in viscosity suppression of polyurethane thickeners.

Even if a *prima facie* case of obviousness were made, which is not conceded, surprising results are obtained with methyl- $\alpha$ -cyclodextrin. Not only is methyl- $\alpha$ -cyclodextrin effective in the viscosity suppression of urethane thickeners despite the smaller size of its hydrophobic cavity, but the viscosity suppression of methyl- $\alpha$ -cyclodextrin is even greater than

that of methyl- $\beta$ -cyclodextrin when the urethane thickener is derived from HDI. Reference is made to Examples 15-18 (pp. 12-13), the results of which are summarized in Table 4 on p. 13.

Lau '266 teaches a polymerization method, not a composition for viscosity suppression of urethane thickeners, and offers no hint or suggestion that that methyl- $\alpha$ -cyclodextrin disclosed therein is suitable for viscosity suppression of urethane thickeners. Methyl- $\alpha$ -cyclodextrin and methyl- $\beta$ -cyclodextrin have different structural features and physical properties, so there can be no expectation of successful viscosity suppression of urethane thickeners when methyl- $\alpha$ -cyclodextrin is substituted for methyl- $\beta$ -cyclodextrin. Moreover, an unexpected and surprisingly good viscosity suppression effect has been discovered for methyl- $\alpha$ -cyclodextrin. For all of these reasons, the use of methyl- $\alpha$ -cyclodextrin for viscosity suppression of urethane thickeners is not obvious. Accordingly, reconsideration and removal of the rejection of claim 1, as herein amended, under 35 U.S.C. § 103(a), as allegedly unpatentable over Eisenhart *et al.* in view of Emmons, *et al.* and in further view of Lau, *et al.* '709 and Lau, *et al.* '266 is respectfully requested.

### **Double Patenting**

Claims 1, 2, 16, and 17 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 4 of Harris, *et al.* (U.S. Patent No. 7,125,919) in view of Emmons, *et al.* Although the conflicting claims are not identical, they are not patentably distinct from each other. Applicants respectfully traverse.

The relevant claims of Harris, *et al.* are reproduced below:

1. A tinting composition comprising:
  - a) at least one colorant composition; and
  - b) from 0.05 to 15 % dry weight of at least one additive based on the weight of said at least one colorant composition,  
wherein said additive comprises at least one highly shear thinning associative thickener, at least one moderately shear thinning associative thickener, and at least one macromolecular organic compound having a hydrophobic cavity.
4. The tinting composition according to claim 1, wherein said highly shear thinning associative thickener comprises a hydrophobically modified alkali soluble polymer, and wherein said moderately shear thinning associative

thickener comprises a nonionic hydrophobically modified ethylene oxide urethane block copolymer.

Harris, *et al.* generally discloses a tinting composition containing at least one colorant and 0.05 to 15% dry weight of at least one additive selected from associative thickeners and macromolecular compounds having a hydrophobic cavity (col. 2, ll. 38-43). Examples of associative thickeners include nonionic hydrophobically modified ethylene oxide urethane block copolymers (col. 4, ll. 40-45). Examples of macromolecular compounds having a hydrophobic cavity are cyclodextrins. Cyclodextrin derivatives are  $\alpha$ -,  $\beta$ -, and  $\gamma$ -cyclodextrins in which at least one hydroxyl group located on the rim of the cyclodextrin ring has been functionalized with a substituent group such as methyl, acetyl, hydroxypropyl, and hydroxyethyl groups (col. 6, ll. 4-24). Methyl- $\beta$ -cyclodextrin is the preferred cyclodextrin (col. 6, ll. 23-24).

Emmons, *et al.* is discussed above.

The Examiner concedes that “The claims [of Harris, *et al.*] do not recite particular hydrophobically modified ethylene oxide urethane block copolymers.”

The Examiner alleges, however, as follows:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prepare the recited composition with cyclodextrins because they are disclosed in the written description of “macromolecular organic compound having a hydrophobic cavity.” It would be further obvious to select any hydrophobically modified ethylene oxide urethane block copolymer known to have utility for the preparation of tinting compositions, such as paint. In doing so, one of ordinary skill would arrive at the instant invention with a reasonable expectation of success.

Applicants respectfully traverse. The disclosure of Harris, *et al.* that is relevant to this rejection is cumulative with the disclosures of Eisenhart, *et al.* and Lau, *et al.* ‘709. The foregoing discussions on the patentability of claims 1 and 29 over Eisenhart, *et al.* in view of Emmons, *et al.* and Lau, *et al.* ‘709 applies to this rejection as well.

Regarding claim 1, methyl- $\alpha$ -cyclodextrin is not specifically mentioned in Harris, *et al.*, but it can be inferred from a Markush group therein. Harris, *et al.* provides no motivation to select methyl- $\alpha$ -cyclodextrin in particular from all the possible cyclodextrins that can be inferred from the disclosure. Emmons, *et al.* is silent on cyclodextrins. Moreover an

unexpected and surprisingly good viscosity suppression effect has been discovered for methyl- $\alpha$ -cyclodextrin. Therefore reconsideration and removal of the nonstatutory obviousness-type double patenting rejection to the extent that it applies to new claim 1 as herein amended is respectfully requested.

Regarding new claim 29, there is no suggestion in Harris, *et al.* that the urethane thickeners disclosed therein have “at least one urethane linkage formed from a diisocyanate comprising 1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,10-decamethylene diisocyanate, 2,2,4-trimethyl-1,6-diisocyanatohexane, and a combination comprising at least one of the foregoing diisocyanates” as recited by claim 29. There is no motivation to select these particular diisocyanate precursors from the disclosure of Emmons, *et al.* to arrive at claim 29. Moreover, surprising and unexpected results are obtained when the associative thickeners are derived from straight chain and branched chain diisocyanates as opposed to cyclic or polycyclic diisocyanates. Therefore reconsideration and removal of the nonstatutory obviousness-type double patenting rejection to the extent that it applies to new claim 29, is respectfully requested.

Claims 1, 2, 16, and 17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of Tanzer, *et al.* (U.S. Patent No. 6,887,928 in view of Emmons, *et al.* Although the conflicting claims are not identical, they are not patentably distinct from each other. Applicants respectfully traverse.

The relevant claims of Tanzer, *et al.* are reproduced below:

1. A method of improving the viscosity stability of a coating composition upon the addition of a colorant component, comprising the steps of:
  - a) providing a base paint; and
  - b) adding to said base paint, a tinting composition comprising:
    - i) at least one colorant composition; and
    - ii) from 0.05 to 15% dry weight of at least one macromolecular compound having a hydrophobic cavity, based on the weight of said at least one colorant composition.
3. The method according to claim 1 or 2 wherein said base paint comprises at least one associative thickener selected from the group consisting of nonionic hydrophobically modified ethylene oxide urethane block copolymer,

hydrophobically modified alkali soluble polymer, hydrophobically modified cellulosic, hydrophobically modified polyacrylamide, and mixtures thereof.

Tanzer, *et al.* generally discloses a tinting composition containing at least one colorant and 0.05 to 15% dry weight of at least one additive selected from associative thickeners and macromolecular compounds having a hydrophobic cavity (col. 2, ll. 36-41). Examples of associative thickeners include nonionic hydrophobically modified ethylene oxide urethane block copolymers (col. 4, ll. 17-21). Examples of macromolecular compounds having a hydrophobic cavity are cyclodextrins. Cyclodextrin derivatives are  $\alpha$ -,  $\beta$ -, and  $\gamma$ -cyclodextrins in which at least one hydroxyl group located on the rim of the cyclodextrin ring has been functionalized with a substituent group such as methyl, acetyl, hydroxypropyl, and hydroxyethyl groups (col. 4, ll. 32-53). Methyl- $\beta$ -cyclodextrin is the preferred cyclodextrin (col. 4, ll. 52-53).

Emmons, *et al.* is discussed above.

The Examiner concedes, “The claims [of Tanzer, *et al.*] do not recite particular hydrophobically modified ethylene oxide urethane block copolymers.”

The Examiner alleges, however,

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prepare the recited composition with cyclodextrins because they are disclosed in the written description of “macromolecular organic compound having a hydrophobic cavity.” It would be further obvious to select any hydrophobically modified ethylene oxide urethane block copolymer known to have utility for the preparation of tinting compositions, such as paint. In doing so, one of ordinary skill would arrive at the instant invention with a reasonable expectation of success.

Applicants respectfully traverse. The disclosure of Tanzer, *et al.* that is relevant to this rejection is cumulative with the disclosures of Harris, *et al.*, Eisenhart, *et al.* and Lau, *et al.* ‘709. The foregoing discussion on the patentability of claims 1 and 29 over Harris, *et al.* in view of Emmons, *et al.* applies equally to this rejection. Therefore reconsideration and removal of the nonstatutory obviousness-type double patenting rejection to the extent that it applies to claim 1 as herein amended, and to new claim 29, is respectfully requested on the same grounds as presented above.

Claims 1, 16, and 17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of Lau, *et al.* '709 in view of Emmons, *et al.* Although the conflicting claims are not identical, they are not patentably distinct from each other. Applicants respectfully traverse.

Claim 1 of Lau, *et al.* '709 is reproduced below:

1. A method for eliminating the need for organic solvents by hydrophobic thickeners useful for thickening aqueous systems containing a water-insoluble polymer, comprising:
  - a) admixing methyl- $\beta$ -cyclodextrin having hydrophobic groups with a hydrophobic thickener selected from the group consisting of hydrophobically modified polyethoxylated urethanes, hydrophobically modified alkali soluble emulsions, hydrophobically modified cellulose, and hydrophobically modified polyacrylamides, where said methyl- $\beta$ -cyclodextrin is admixed in an amount effective to complex the hydrophobic groups of said methyl- $\beta$ -cyclodextrin with the hydrophobic groups of said hydrophobic thickener;
  - b) adding said complexed admixture to said aqueous system containing a water-insoluble polymer; and
  - c) adding to said aqueous system containing said complexed admixture and said water-insoluble polymer, a surfactant selected from the group consisting of an anionic, nonionic and cationic surfactant, where said surfactant is added in an amount effective to decomplex the hydrophobic groups of said methyl- $\beta$ -cyclodextrin from the hydrophobic groups of said hydrophobic thickener.

Lau, *et al.* '709 and Emmons, *et al.* are further discussed above.

The Examiner characterizes the claims of Lau, *et al.* '709 as being "drawn to a method for eliminating the need for organic solvents in a composition comprising a hydrophobic thickener, such as generic hydrophobically modified polyethoxylated urethane by the addition of methyl- $\beta$ -cyclodextrin", and concedes that "The claims do not recite particular hydrophobically modified ethylene oxide urethane block copolymers."

The Examiner alleges however:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to carry out the reference method for elimination of organic solvent using a thickener known to require the addition of an organic solvent as a viscosity modifier with a reasonable expectation of success. In doing so, the artisan would arrive at the instant composition.

Applicants respectfully traverse, at least to the extent that this rejection applies to new claim 29. (Claim 1 as herein amended incorporates the limitation of previously presented claim 2. Therefore, this rejection is not applicable to claim 1.) The disclosure of Lau, *et al.* '709 that is relevant to this rejection is cumulative with the disclosures of Harris, *et al.*, Tanzer, *et al.*, and Eisenhart, *et al.* The foregoing discussions on the patentability of claim 29 over Harris, *et al.* in view of Emmons, *et al.* and over Tanzer, *et al.* in view of Emmons, *et al.* apply equally to this rejection. Therefore reconsideration and removal of the nonstatutory obviousness-type double patenting rejection to the extent that it applies to new claim 29, is respectfully requested on the same grounds as presented above.

Claims 1, 2, 16, and 17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of Eisenhart, *et al.* in view of Emmons, *et al.* Claim 2 is rejected further in view of Lau, *et al.* '709 and Lau, *et al.* '266. Although the conflicting claims are not identical, they are not patentably distinct from each other. Applicants respectfully traverse.

The relevant claims of Eisenhart, *et al.* are reproduced below:

1. A method for eliminating the need for organic solvents by hydrophobic thickeners useful for thickening aqueous systems containing a water-insoluble polymer, comprising:
  - a) admixing a cyclodextrin-containing compound having hydrophobic groups with a hydrophobic thickener selected from the group consisting of hydrophobically modified polyethyloxylated urethanes, hydrophobically modified alkali soluble emulsions, hydrophobically modified cellulose, and hydrophobically modified polyacrylamides where said cyclodextrin-containing compound is admixed in an amount effective to complex the hydrophobic groups of said cyclodextrin-containing compound with the hydrophobic groups of said hydrophobic thickener;
  - b) adding said complexed admixture to said aqueous system containing a water-insoluble polymer; and
  - c) adding to said aqueous system containing said complexed admixture and said water-insoluble polymer, a compound having an affinity for the cyclodextrin-containing compound wherein said compound is an anionic, nonionic and cationic surfactant and where said compound is added in an amount effective to decomplex the hydrophobic groups of

said cyclodextrin-containing compound from the hydrophobic groups of said hydrophobic thickener.

2. The method of claim 1 wherein said cyclodextrin-containing compound is selected from the group consisting of alpha, beta and gamma cyclodextrin and ethoxylated and propoxylated cyclodextrins.

All of the cited references are further discussed above.

The Examiner refers to the '928 patent in the discussion of this rejection, but it is believed that Eisenhart, *et al.* is meant. The Examiner characterizes the claims of Eisenhart, *et al.* as being "drawn to a method for eliminating the need for organic solvents in a composition comprising a hydrophobic thickener, such as generic hydrophobically modified polyethoxylated urethane by the addition of a cyclodextrin", and concedes that "The claims do not recite particular hydrophobically modified ethylene oxide urethane block copolymers.

The Examiner alleges however

It would have been obvious to one having ordinary skill in the art at the time the invention was made to carry out the reference method for elimination of organic solvent using a thickener known to require the addition of an organic solvent as a viscosity modifier with a reasonable expectation of success. In doing so, the artisan would arrive at the instant composition.

In regards to claim 2, the Examiner alleges,

Lau '709 and Lau '266 teach as set forth above. The claims recite the use of unmodified  $\alpha$ -,  $\beta$ -, and  $\lambda$ -cyclodextrins, as well as modified  $\alpha$ -,  $\beta$ -, and  $\lambda$ -cyclodextrins. Therefore, in view of the teaching of Lau '709 regarding the utility of methyl- $\beta$ -cyclodextrin, it would be further obvious to modify the combination of Eisenhart and Emmons by the use of any available modified cyclodextrin, such as methyl- $\alpha$ -cyclodextrin, disclosed by Lau, '266, with a reasonable expectation of success.

Applicants respectfully traverse both rejections. The grounds for these rejections are identical to the grounds for the rejection of these claims as obvious under § 103, and the rejections are addressed by the Applicant in the foregoing section. Therefore reconsideration and removal of the nonstatutory obviousness-type double patenting rejection to the extent that



it applies to claim 1 as herein amended, and to new claim 29, is respectfully requested on the same grounds as presented above.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance are requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No.18-850.

Respectfully submitted,

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